

Prolific

Integrated cascades of PROCesses for the extraction and valorisation of proteins and bioactive molecules from Legumes, Fungi and Coffee agro-industrial side streams

Summary

Agro-industrial residual biomass, side streams and food production by-products such as legumes, fungi and coffee are likely to constitute rich sources of valuable ingredients. Their potential is yet to be fully realised. The Prolific project will apply a range of processing technologies to agro-industrial residues of legumes, fungi and coffee in order to recover significant amounts of proteins/peptides, fibres and other value-added compounds.

Once extracted by economically and environmentally sustainable protocols, the outputs will undergo enzymatic modification and conditioning techniques in an upscaled, industrially-relevant environment. Ultimately, this will provide viable amounts of the compounds and fractions necessary to produce 16 prototypes for the food, feed, packaging and cosmetic sectors. The Prolific project's R&D&I activities and partners are streamlined around a core innovation cycle, principally driven by industrial end-users that know precisely what their customers need and the what are the technical and industrial demands of their sector.

Objectives

The overall objective of the Prolific project is to apply, validate and scale up an integrated array of processes for recovering significant amounts of proteins/peptides and other value-added compounds from the agro-industrial residues of legumes (seeds of peas, beans and chickpeas), fungi (cuttings and mycelia of different species) and coffee (silver skin and non-compliant roasted seeds). The Prolific project will pursue the following specific objectives.

- Mapping the availability and sustainability of the chosen feedstocks (legumes, fungi and coffee residues) during and after the project;
- Defining the specifications and compliance of residue-derived compounds with existing regulations;
- Establishing flexible and fully-scalable biorefinery extraction protocols for isolating proteins and bioactive compounds from plant residues;
- Converting extracted fractions into valuable



Type of Action:

Research & Innovation Action

Value Chain: VC4 – organic waste

Start date: 01 September 2018

End date: 31 August 2022

BBI JU contribution: € 4,672,383

Expected impacts

The overall impact of the Prolific project is to address specific challenges posed by the valorisation of untapped biomass streams. Specifically, these include:

- Addressing the present European food policy for the provision of safe, nutritious, high quality and affordable food to European consumers by valorising the increasing amounts of side-streams from the processing of legumes, fungi and coffee;
- Become the leading solutions' provider for ingredients/additive alternatives or complementary to those currently available
- Contributing to meet the increasing demand for bio-based, active, and biodegradable molecules and polymers to be used for polymer formulations and applications;
- Introducing and validating bio-polymers and green additives in packaging applications

- Ingredients tailored to the specific final applications of industrial end-users;
 - Selecting, validating and demonstrating the use of extracted/converted fractions as ingredients in the food sector;
 - Selecting, validating and demonstrating the use of extracted/converted fractions as ingredients in cosmetic sector;
 - Selecting, validating and demonstrating the use of extracted/converted fractions as ingredients and additives in packaging sector;
 - Selecting, validating and demonstrating the use of extracted/converted fractions as ingredients in the animal feed sector;
 - Successful disseminating the project results and preparing them for efficient exploitation.
- Growing the bio-plastics sector and thus mitigating climate change;
 - Contributing to produce new generation of functional feed products also aiming at reducing the dependency from antibiotics
 - Contributing to produce innovative cosmetic products using more sustainable bio-based ingredients

Project coordination

- Fachhochschule Nordwestschweiz (Switzerland)
- Università di Bologna (Italy)
- Innovacio I Recerca Industrial I Sostenible SL (Spain)
- Università degli Studi di Parma (Italy)
- Stazione Sperimentale per l'industria delle Conserve Alimentari (Italy)
- Celabor SCRL (Belgium)
- IGV Institut für Getreideverarbeitung GMBH (Germany)
- Stolzenberger Reiner Erich (Germany)
- Bio Base Europe Pilot Plant VZW (Belgium)
- Conserves France (France)
- RTD Talos Limited (Cyprus)
- Cosmetic (Greece)
- Illycaffè S.p.A. (Italy)
- Nutrition Sciences NV (Belgium)
- Pleurette (France)
- Femto Engineering S.r.l. (Italy)
- Innovacoop S.r.l. (Italy)

Organisation name: Fachhochschule Nordwestschweiz (Switzerland)